Medical Operations Decision Support System, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

Determining the probability of specific medical events on a given space mission is difficult. Yet, it is important to have reasonable estimates of these probabilities in order to make informed decisions about managing the associated risks. NASA's mission is and always will be to push the envelope, to go where no historical record exists to give guidance. Consequently, it is necessary to consider additional sources of information, like expert opinion, analog studies, and controlled studies. To combine this information in a principled way, each source should be documented and should be characterized according to its "level of evidence." NASA's researchers need the capability to gather information about each possible event, calculate the probability, update the calculations as new information is discovered, and support informed decisions about risks and risk mitigation strategies. S&K Aerospace (SKA) proposes an innovative Web-based system to collect relevant evidence for medical events and facilitate the assignment of its "level of evidence", and combine evidence from multiple sources so that principled decisions can be reached concerning the probability of those events. We intend to provide users with the ability to adjust the weighted combinations of multiple sources in order to refine the combined estimates, based on the expert opinion of the user of the software system. This system, which we call the Medical Event Decision Support System, or MEDSS, will allow researchers to create a database of possible medical events that require analysis. For each event, information and references can be added; this information can take any form. In addition, we will build an inference engine that can calculate the probability of the event occurring, based on the information that is available. Each event will have a range of hypothetical mitigation strategies, along with the current best recommendation.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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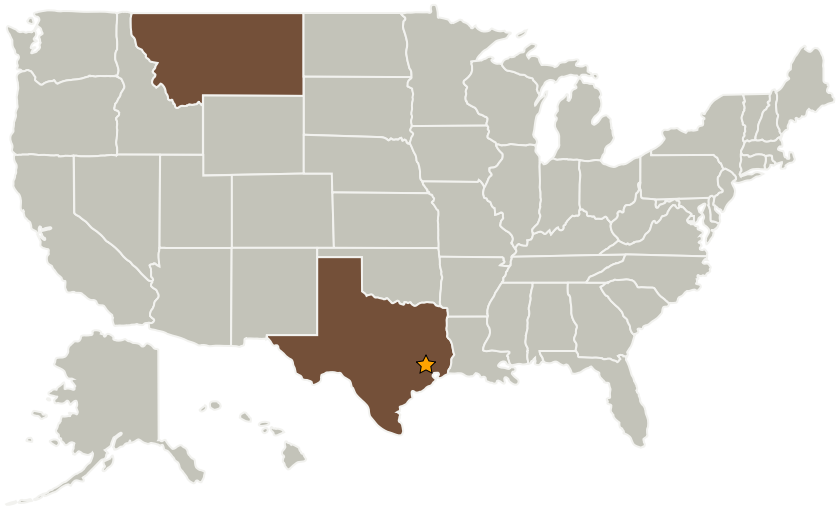
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
S&K Aerospace, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	St Ignatius, Montana

Primary U.S. Work Locations	
Montana	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.1 Medical Diagnosis and Prognosis